Personal Information

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Education

1993	PhD Department of Meteorology, University of Reading, UK
1990	Pure and Applied Mathematics, University of Swansea, UK. 1st Class Honours, Oldroyd prize for Applied Mathematics,

Appointments

2012 -	Joint Met Office Chair in Climate Change, College of Engineering, Mathematics and Physical Sciences (CEMPS), University of Exeter, UK. ('Joint Chair' indicates that a small fraction of my salary is contributed by the UK Met Office as part of the Met Office Academic Partnership)
2010 - 2012	Associate Professor in Climate Systems, College of Engineering, Mathematics and Physical Sciences, University of Exeter, UK
2003 - 2010	Manager of Ensemble Climate Prediction, Met Office Hadley Centre, Exeter, UK
1999 - 2003	Senior Research Fellow, Department of Meteorology, University of Reading, UK
1997 - 1999	Climate Prediction Scientist, Met Office Hadley Centre, Bracknell, UK
1993 - 1997	Research Fellow, Department of Atmospheric, Oceanic and Planetary Physics, University of Oxford, UK

Ten Year Track Record

My research in the last ten years has been in a number of areas. The dynamics and physics of the El Niño Southern Oscillation (ENSO) and its response under climate change has been a long-term interest. I have been involved in a number of key recent activities in this area including a widely cited perspectives piece in Nature Geosciences in 2010 that reviewed the state-of-the art of ENSO and climate change and a recent series of papers that have revealed the possibility of an increase in extreme ENSO events in the future which have a non-linear impact on features such as the South Pacific Convergence Zone. Another major theme has been in the quantification of uncertainty in climate projections using ensembles of climate models (both perturbed physics and multi-model). I led a group in the Met Office that produced ensembles and implemented an algorithm for producing probabilistic projections of climate change (specifically for the UK, for which we received a Met Office Award for Scientific Excellence). This work has led to a number of highly cited publications. It also led to me being appointed as a Coordinating Lead Author of the 5th Assessment of the Intergovernmental Panel on Climate Change. In 2014 I was included in the Thomson Reuters Highly Cited Researcher list, which ranks me among the top 1% of researchers in Geosciences.

More recently I have diversified my research interests and now have, or have had, PhD students, funded projects and publications in the following areas; Arctic sea-ice, South Asian Monsoon, tropical climate feedbacks, African climate change, N. Atlantic seasonal variability and decadal variability with a focus on the hiatus. My future research area can be best described as understanding and quantifying future spatial patterns of climate change, combining information from climate models and observations.

Publications

I have 111 publications in Web of Science, ~7,400 citations, ~65 citations/publication, h-index 41. Ten representative publications are listed below.

- Cai, W., Borlace, S., Lengaigne, M., van Rensch, P., **Collins, M.**, Vecchi, G., Timmermann, A., Santoso, A., McPhaden, M.J., Wu, L., England, M.H., Wang, G., Guilyardi, E., Jin, F.-F., 2014. Increasing frequency of extreme El Nino events due to greenhouse warming. Nature Climate Change 4, 111-116.
- Cai, W., Lengaigne, M., Borlace, S., **Collins, M.**, Cowan, T., McPhaden, M.J., Timmermann, A., Power, S., Brown, J., Menkes, C., Ngari, A., Vincent, E.M., Widlansky, M.J., 2012. More extreme swings of the South Pacific convergence zone due to greenhouse warming. Nature 488, 365-+.
- **Collins, M.**, An, S.-I., Cai, W., Ganachaud, A., Guilyardi, E., Jin, F.-F., Jochum, M., Lengaigne, M., Power, S., Timmermann, A., Vecchi, G., Wittenberg, A., 2010. The impact of global warming on the tropical Pacific ocean and El Nino. Nature Geoscience 3, 391-397.
- **Collins, M.**, Booth, B.B.B., Harris, G.R., Murphy, J.M., Sexton, D.M.H., Webb, M.J., 2006. Towards quantifying uncertainty in transient climate change. Climate Dynamics 27, 127-147.
- **Collins, M.**, Chandler, R.E., Cox, P.M., Huthnance, J.M., Rougier, J., Stephenson, D.B., 2012. Quantifying future climate change. Nature Climate Change 2, 403-409.
- Cox, P.M., Harris, P.P., Huntingford, C., Betts, R.A., **Collins, M.**, Jones, C.D., Jupp, T.E., Marengo, J.A., Nobre, C.A., 2008. Increasing risk of Amazonian drought due to decreasing aerosol pollution. Nature 453, 212-U217.
- Guilyardi, E., Wittenberg, A., Fedorov, A., **Collins, M.**, Wang, C., Capotondi, A., van Oldenborgh, G.J. and Stockdale, T., 2009. Understanding El Nino in Ocean-Atmosphere General Circulation Models Progress and Challenges. Bulletin of the American Meteorological Society, 90(3): 325-+.
- Murphy, J.M., Booth, B.B.B., **Collins, M.**, Harris, G.R., Sexton, D.M.H. and Webb, M.J., 2007. A methodology for probabilistic predictions of regional climate change from perturbed physics ensembles. Philosophical Transactions of the Royal Society a-Mathematical Physical and Engineering Sciences, 365(1857): 1993-2028.
- Roberts, C.D., Palmer, M.D., McNeall, D., **Collins, M.**, 2015. Quantifying the likelihood of a continued hiatus in global warming. Nature Climate Change 5, 337-342.
- van Oldenborgh, G.J., Philip, S.Y., **Collins, M.**, 2005. El Nino in a changing climate: a multi-model study. Ocean Science 1, 81-95.

Research monographs (selected)

- **Collins, M.**, Knutti, R., Arblaster, J., Dufresne J-L, Fichefet, T., Friedlingstein, P., Gao, X., Gutowski, W.J., Johns, T., Krinner, G., Shongwe, M., Tebaldi, C., Weaver, A.J., Wehner, M., 2013. Long-term Climate Change: Projections, Commitments and Irreversibility, in: Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (Ed.), Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- Knutti, R., G. Abramowitz, **M. Collins**, V. Eyring, P.J. Gleckler, B. Hewitson, and L. Mearns, 2010, Good Practice Guidance Paper on Assessing and Combining Multi Model Climate Projections. In: Meeting Report of the Intergovernmental Panel on Climate Change Expert Meeting on Assessing and Combining Multi Model Climate Projections [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, and P.M. Midgley (eds.)]. IPCC Working Group I Technical Support Unit, University of Bern, Bern, Switzerland.
- Murphy, J.M. Sexton, D., Jenkins, G., Boorman, P., Booth, B., Brown, K., Clark, R., **Collins, M**., Harris, G. and, Kendon, E., 2009, UKCP09 Climate change projections. ISBN 978-1-906360-02-3.
- Ensembles and probabilities: A new era in the prediction of climate change, 2007, **M. Collins**, S. Knight eds. Phil. Trans. R. Soc. A, vol 365.

Invited presentations (Representative sample)

Invited seminar, Geophysical Fluid Dynamics Laboratory, Princeton, USA, March 2015
Keynote presentation, International Council for the Exploration of the Sea (ICES) conference, A Coruna, Spain, September 2014
Invited lecturer, Alpine Summer School, Aosta Valley, Italy, June 2014
Keynote presentation, PICES Future Open Science Meeting, Hawaii, USA, April 2014
Invited seminars, Centre for Climate Research, Singapore, January 2014
Keynote presentation, Warsaw Climate Change Conference, Warsaw, Poland, November 2013
Invited lecturer, Chinese School on Climate, Beijing, China, April 2013
Keynote presentation, workshop on abrupt climate change, Tokyo, Japan, March 2013
Invited seminar, ETH Zurich, Switzerland, May 2012
Keynote presentation, Royal Society meeting on palaeo climate, 2011
Invited seminar, University of New South Wales, 2011
Keynote presentation, ENSO workshop, Guyaquil, Ecuador, 2010

Research Funding

Since my appointment at the University of Exeter in 2010 I am the recipient of a total of £3 million grant funding as Principal Investigator or Co-Investigator, from NERC, Met Office and the EU. Notable projects that I lead or have led are 'Robust Spatial Projections of Real-World Climate Change' (£1.1 million), 'South Asian Precipitation: A Seamless Assessment', a UK-India collaboration on the South Asian Monsoon (£600K) and 'Process-based Emergent Constraints on Global Physical and Biogeochemical Feedbacks' (£400K). There was no requirement to source research funding in my previous position at the Met Office hence I do not have a track record prior to my current position.

Fellowships and Awards

2014	Thomson Reuters Highly Cited Researcher, ranked among the top 1% of researchers in Geosciences
2009	Met Office Award for Excellence, Outstanding Scientific and Technical Achievement for work on the UK Climate Projections 2009, Met Office, UK

Mentoring and Development of Early Career Researchers

I have supervised or co-supervised 8 PhD students (5 complete, 3 ongoing) at 3 different institutions – University of Exeter and the Met Office (joint) and University of Reading. Completed PhDs: Brierley – lecturer at University College London; Keeley – scientist at European Centre for Medium Range Weather Forecasts; Mosedale – senior manager with Price Waterhouse Coopers; Sanchez – weather and climate research at the Met Office. I have also acted as External Examiner for PhD students at the University of Reading, University of Utrecht and KNMI, Netherlands, and University of Oxford.

I have supervised 11 post-doctoral researchers (8 completed; 6 ongoing) at the University of Exeter, the Met Office and University of Reading. The majority have stayed in science and those who have not have forged careers in industry. Jo Brown is a climate scientist in the Centre for Australian Weather and Climate Research at the Bureau of Meteorology with a growing publication record; Ben Booth is a climate scientist at the Met Office with a lead-author paper in Nature. B. Bhaskaran is head of technical computing solutions at Fujitsu.

Since 2014 I have held the position of College Director of Postgraduate Researchers at the University of Exeter.

Teaching activities

2014	Lecturer Exeter Massive Open Online Course (MOOC) on Climate Change
2012 -	Scientific writing course, Met Office, UK

2012 - Lecturer on UK Climate Modelling training course
2010 - Mathematics lecturer, University of Exeter, UK, teaching at undergraduate, Masters and PhD level

Selected leadership responsibilities and commissions of trust

2015 - Co-chair, CLIVAR Climate Dynamics Panel, International
2014 - Core Panel Member (Panel B), Natural Environment Research Council (NERC), UK
2010 - 2012 Voted in as Vice President of the Royal Meteorological Society, RMetS, UK
2010 - Member of NERC High Performance Computing Steering Committee, UK
2010 - Appointed Coordinating Lead Author IPCC 5th Assessment Report, Chapter 12 "Long-term Climate Change: Projections, Commitments and Irreversibility"
2010 - Member of the CLIVAR Pacific Implementation Panel, International
2002-08; 2010- Member of Royal Meteorological Society Council and Trustee of the Society
1993 - Fellow of the Royal Meteorological Society

Editorial responsibilities

2016 - Editor of Journal of Climate, International
2007 Principal Editor of special issue of Philosophical Transactions of the Royal Society A "Ensembles and probabilities: A new era in the prediction of climate change"

Article and grant reviewing

I am a Reviewer for many major journals including Climate Dynamics, J. Clim., GRL, IJC, JGR, Nature, Nature Climate Change, Nature Geosciences, QJRMS, Phil. Trans. Roy. Soc.

I am a Reviewer for national and international funding bodies including Belgian Science Policy, Canadian Foundation for Climate and Atmospheric Science, EU, NOAA, NERC, NSF, US CLIVAR, US CLIVAR/NOAA.

Organisation of Scientific Meetings

Served on the organizing committees of a number of workshops and convened many sessions at international conferences. A brief selection is given here.
2015 Session at 'Our Common Future Under Climate Change', Paris, France
2015 El Niño Southern Oscillation Workshop, 50-participants, Sydney, Australia
2014 Transformational Climate Change, Exeter, UK
2010 IPCC Expert Meeting on Projections, 50 participants, Bolder USA
2005 Co-convener Climate Changes Session at the European Geophysical Union

Major Collaborations

Met Office Climate Projections Group (lead James Murphy), Met Office, UK [13 publications, including my highest cited paper with ~800 citations]
Wenju Cai, ENSO dynamics, CSIRO, Australia [7 publications, 5 in Nature Group journals]
Eric Gyilyardi, ENSO in models, LOCEAN Paris, France [4 publications]
Axel Timmerman and Fei-Fei Jin, ENSO dynamics, University of Hawaii, USA [4 publications]
Alexander Tudhope, PalaeoENSO, University of Edinburgh, UK [7 publications]
Geert Jan van Oldenborgh, KNMI, Holland [5 publications]

Patents

Allen, MR, Collins, M and Stainforth, DA. Improvements in or relating to forecasting. Patent nos US 7016784, EU 1 381 888A